Childhealth Imprints

Saving children lives – The Data Way

COMPANY INFO

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Agenda

Childhealth Imprints

1.Backgorund & Context

- Prematurity
- Apnea of Prematurity
- Apnea Definition

2. Objectives of the Research

- Set of detected apnea events each with their label , temporal onset and offset, confidence score
- Determine the number of apneic events before, during, after caffeine treatment
- Determine heart rate changes before, during, after caffeine treatment

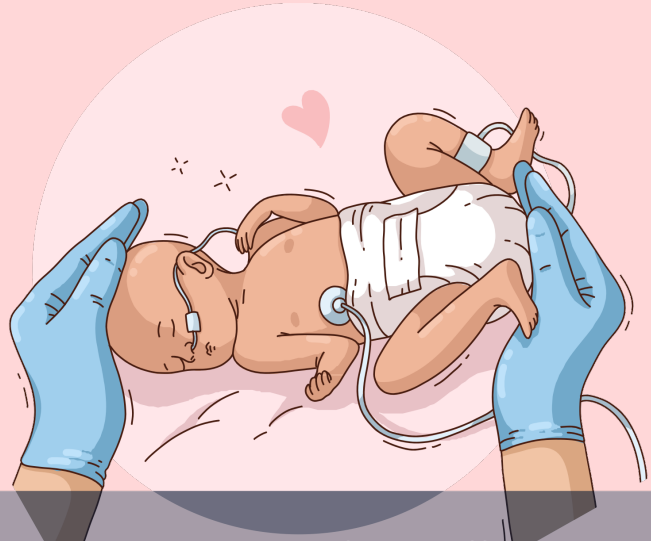
3. Output Visualization

- Baseline
- Apnea trends
- Charts

Background & Context

Background and Context

Background & Context



Preterm babies face different health challenges throughout their NICU stay

<28 weeks

Lungs not developed: Respiratory Issues and Bronchopulmonary dysplasia (BPD)

28-36 weeks

Digestive system and intestinal development: Necrotizing enterocolitis (NEC)

36-38 weeks

Brain development, oxygen support, and eyes: retinopathy of prematurity (ROP)

Apnea of Prematurity

- Apnea of prematurity (AOP) is a major respiratory disorder in newborn neonates caused due to functional immaturity of the respiratory control system
- AOP can be defined cessation of breathing for >20 s or a shorter pause accompanied by bradycardia (<100 beats per minute), cyanosis.
- Most common interventions for AOP include tactile stimulation, nasal cannula flow or continuous positive airway pressure, positive pressure ventilation, and methylxanthine therapy
- A multi- site Caffeine for Apnea of Prematurity (CAP) Trial suggested early treatment with caffeine (≤3 days of life, DOL) is associated with a reduction in ventilation times when compared with infants with late caffeine treatment (4–10 DOL)

Apnea Definition

Apnea was defined as the cessation of breathing for >20 s or a shorter pause in breathing accompanied by bradycardia (<80 beats per minute) or cyanosis (oxygen desaturation <80%) AOP can be defined cessation of breathing for >20 s or a shorter pause accompanied by bradycardia (<100 beats per minute), cyanosis.

Central apnea of at least 10 seconds with associated decline in heart rate to <100 bpm and oxygen saturation to <80%.

Objectives & Methodology

Set of detected apnea events each with their label , temporal onset and offset, confidence score

- **Data capture : (a) Position (b) Probes attached (c) Color the baby**
- Data Annotation and Temporal activity localization

Determine heart rate changes before, during, after caffeine treatment
Data capture : (a) Heart Rate (b) Oxygen Saturation

Determine the number of apneic events before, during, after caffeine treatment

- Data capture : (a) caffeine medication data

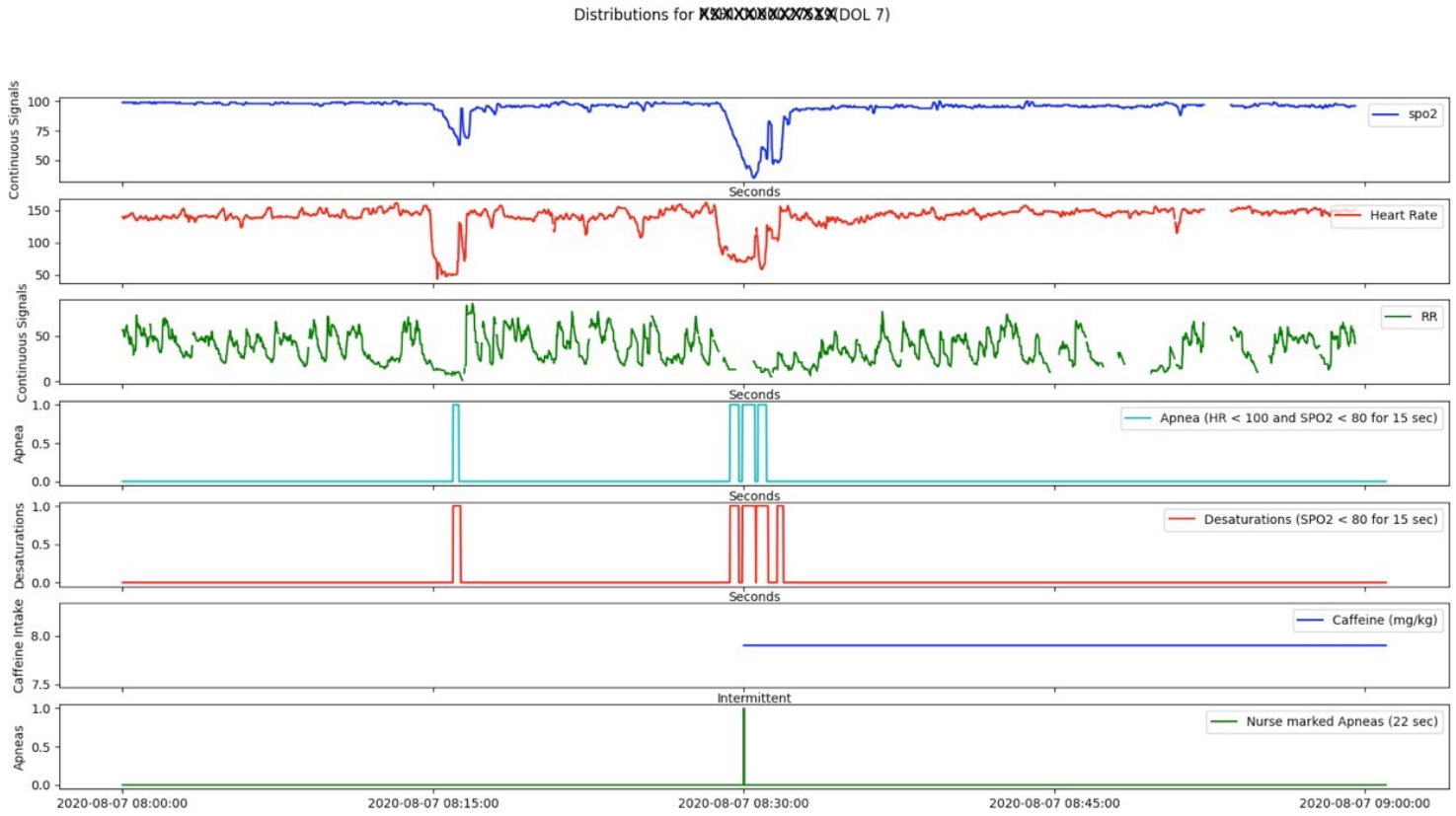
Determine the effect of use of prophylactic caffeine (≤3 days of life, DOL) for preterm infants at risk of apnea

Baseline Data

Table 1: Baseline characteristics of the study population				
	Gestation (weeks)			
Characteristics	**26-28 (n = xx)**	**28-30 (n= xx)**	**30-32 (n= xx)**	**32-35 (n= xx)**
Perinatal Factors				
Maternal age				
Multiple Pregnancy				
Antenatal Infections				
UTI				
Intrauterine Infection				
Maternal disease				
Hypertension				
PIH				
GDM				
Diabetes				
Hypothyroidism				
Others				
Magnesium Sulphate				
Steroids				
Given Yes / No				
Type of Steroids Beta/Dexa				
Complete / Incomplete				
Single or Multiple courses				

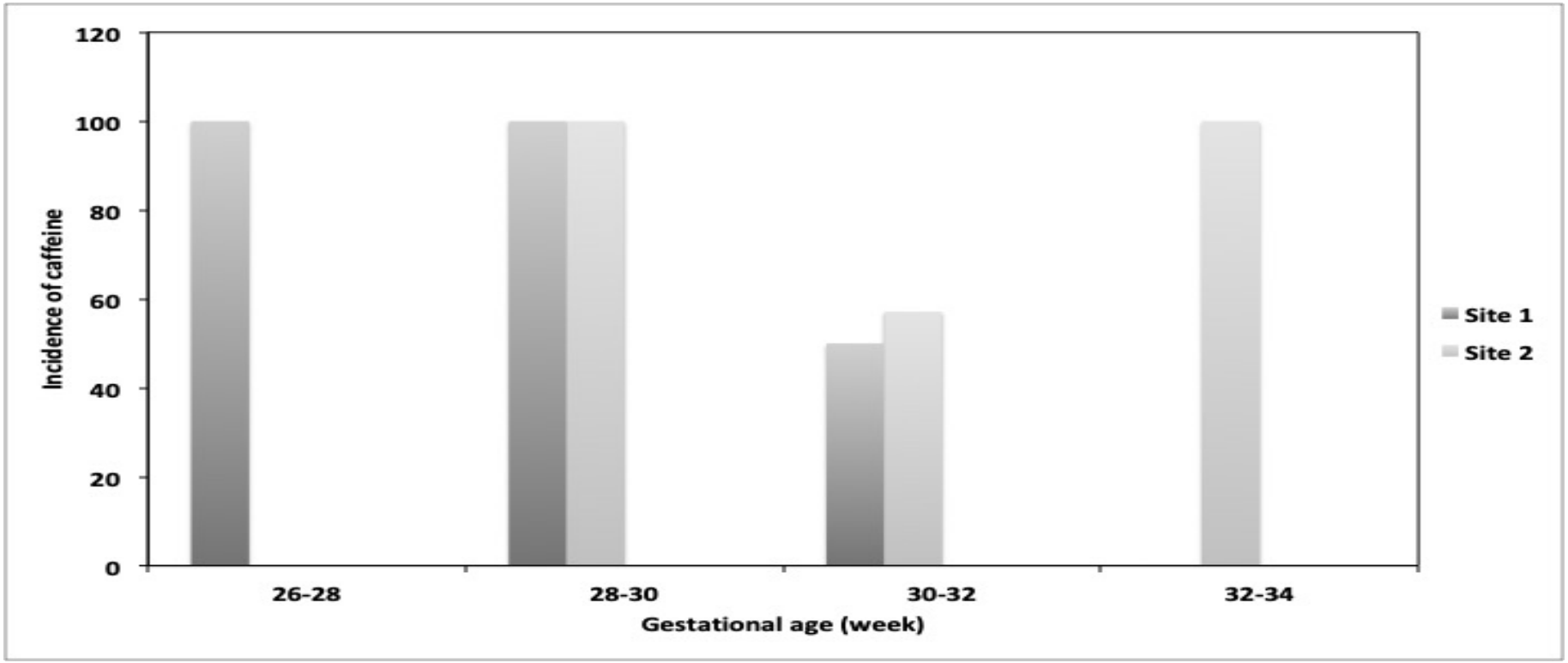
Multiple ANS Risk factors PROM PPROM Prematurity Histologic Chorioamniotis Umbilical Doppler Abnormal Normal				
Birth details Gestational age (Mean) Mode of delivery Caesarean section Need for PPV Yes / No Duration of PPV Other resuscitation requirement Apgar 1 min, ≤5 Apgar 5 min, ≤ 5 Gender, male Inborn Gestation, weeks*				

Apnea events



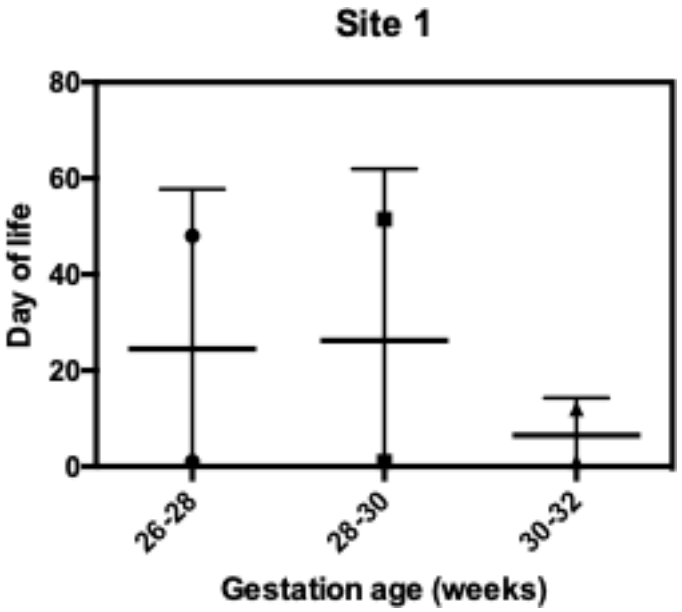
Objectives

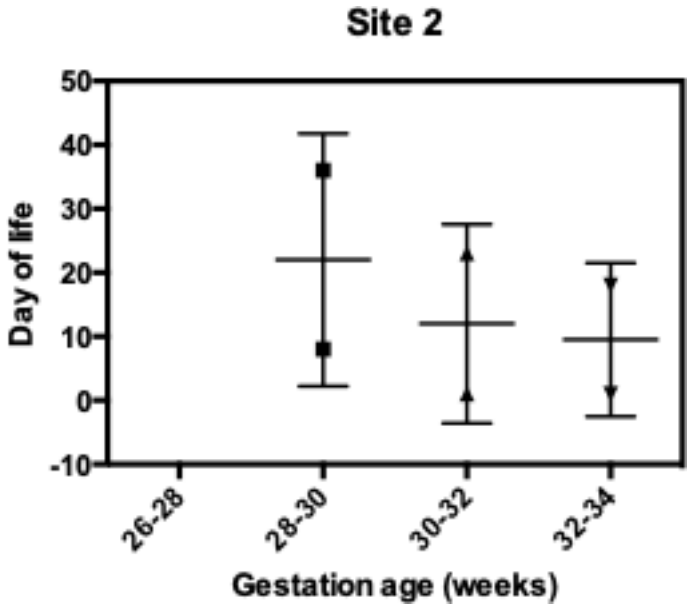
Determine the incidence of caffeine use in different gestational age groups in the NICU



Objectives

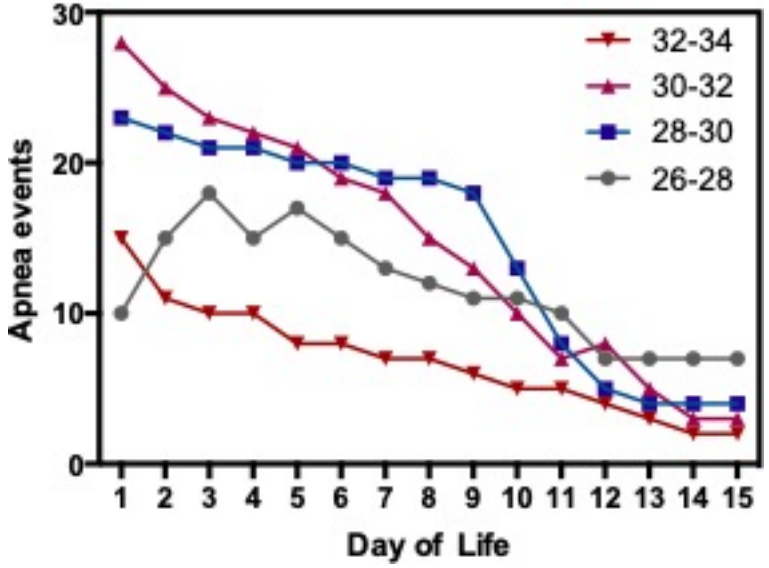
Determine when caffeine was started and stopped (days of age)





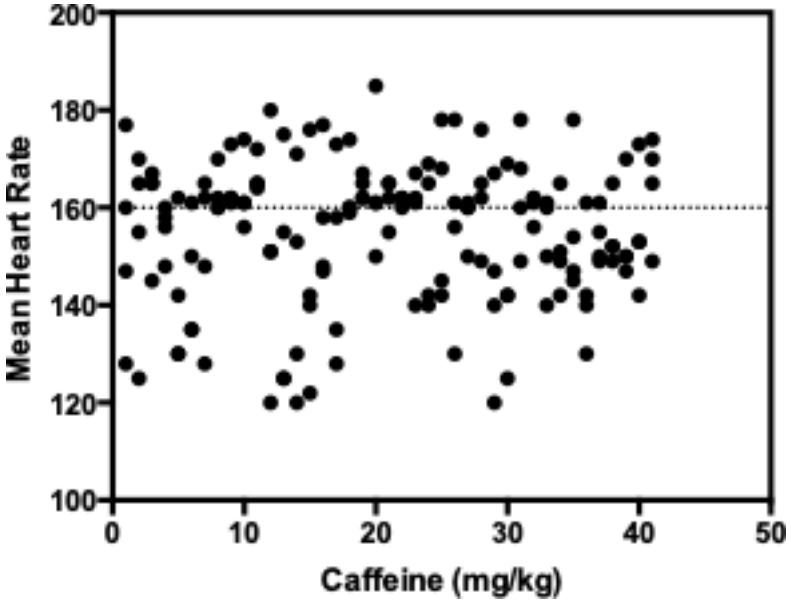
Objectives

Determine the median number of apneic events before , during, after caffeine treatment



Objectives

Determine the heart rate changes before , during, after caffeine treatment



Objectives

Determine the number of apnea events for every gestation